

CLAIMS

What is claimed is:

1. A method for maintaining synchronization and power control of wireless signals sent between wireless gateways comprising:
 - 5 transmitting, from a subscriber access unit to a base station processor, a wireless message having a power level;
 - receiving the wireless message at the base station processor;
 - determining, by a power level detector in the base station processor, the power level of the wireless message;
 - 10 transmitting, to a subscriber access unit, a power control message indicative of a change to the power level of successive messages;
 - computing, at the subscriber access unit, a new power level corresponding to the power control message;
 - adjusting the transmission power according to the new power level; and
 - 15 transmitting a successive wireless message from the subscriber access unit to the base station processor at the new power level, the subscriber access unit and the base station processor maintaining an idling mode connection between the sending of the wireless message and the sending of the successive wireless message by the power level of the power control message.
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2. The method of claim 1 wherein the messages are sent at predetermined intervals.
3. The method of claim 2 wherein the predetermined intervals are time slots.
4. The method of claim 3 wherein a plurality of a predetermined number of time
25 slots comprise a power control group.

5. The method of claim 3 wherein each of the time slots corresponds to a particular subscriber access unit.
6. The method of claim 5 wherein the power control message is sent to the user based on the subscriber access unit corresponding to the time slot of the wireless signal.
7. The method of claim 6 wherein a power control metric determines a power level of the power control message.
8. The method of claim 7 wherein the power control metric further comprises at least one of a signal-to-noise ratio, a link quality measurement, a carrier-to-interference (C/I) ratio, and a bit-error rate (BER).
9. The method of claim 1 wherein the power control message further comprises a power control bit indicative of a change in the power level for successive messages.
10. The method of claim 1 wherein computing the new power level further comprises determining which of a plurality of directional antenna elements the message was sent from.
11. The method of claim 10 wherein the power control message further comprises a pattern control bit indicative of which of a plurality of antenna patterns is to be used for successive transmissions.
12. The method of claim 1 wherein the wireless messages are sent on a reverse link and the power control messages are sent on a forward link.

13. The method of claim 1 wherein the wireless messages further comprise alternative reports, the alternative reports including link command reports, relative adjustment reports, and absolute level reports.
14. The method of claim 1 wherein the power control message is sent two time slots after the corresponding wireless message.
15. The method of claim 1 wherein the power control message is operable for maintaining a code phase lock.
16. The method of claim 2 wherein the predetermined interval further comprises a minimal duration required to maintain power control.
17. The method of claim 16 wherein the minimal duration corresponds to an acceptable power control error.
18. A system for maintaining synchronization and power control of wireless signals sent between wireless gateways comprising:
 - a base station processor;
 - at least one subscriber access unit operable to send a wireless message having a power level to the base station processor;
 - a transceiver at the base station processor operable to receive the wireless message;
 - a power level detector in the base station processor operable to determine the power level of the wireless message;
 - a link quality controller in the base station processor operable to compute, based on the power level, a power control message indicative of a change to the power level of successive messages; and

a transceiver in the base station processor operable to transmit the power control message to a subscriber access unit, the subscriber access unit operable to compute a new power level corresponding to the power control message, and further operable to transmit a successive wireless message from the subscriber access unit to the base station processor at the new power level, the subscriber access unit and the base station processor maintaining an idling mode connection between the sending of the wireless message and the sending of the successive wireless message.

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- 10 19. The system of claim 18 wherein the subscriber access unit is further operable to send the wireless messages at predetermined intervals.
20. The system of claim 19 wherein the predetermined intervals are time slots.
- 15 21. The system of claim 20 wherein a plurality of a predetermined number of time slots comprise a power control group.
22. The system of claim 21 wherein the predetermined number is 16.
23. The system of claim 19 wherein each of the time slots corresponds to a particular subscriber access unit.
- 20 24. The system of claim 23 wherein the base station processor is further operable to send the power control message to the subscriber access unit corresponding to the time slot of the wireless signal.
- 25 25. The system of claim 18 wherein the power control message further comprises a power control bit indicative of a change in the power level for successive messages.

26. The system of claim 18 further comprising a directional antenna having a plurality of elements, wherein the base station processor is further operable to determine the new power level by determining which of the elements the message was sent from.
- 5 27. The system of claim 26 wherein the power control message further comprises a pattern control bit indicative of which of the plurality of elements is to be used for successive transmissions.
- 10 28. The system of claim 18 further comprising a reverse link and a forward link, wherein the wireless messages are sent on a reverse link and the power control messages are sent on a forward link.
29. The system of claim 18 wherein the base station processor is operable to send the power control message two time slots after the corresponding wireless message.

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